IN THE CLAIMS

Please amend claims 1, 12, 19 and 28 as presented below.

1. (Currently Amended) A method of detecting defects in an object comprising the steps of:

acquiring a digital image of said object;

applying a set of ~~one or more~~ oriented filters to said digital image to generate a corresponding set of filtered data, wherein said set of oriented filters comprise two dimensional oriented spatial bandpass filters having incremented angles of orientation between each of said filters; and

combining said set of filtered data to form a combined data set representing defect features~~.~~, wherein said combining step further comprises the steps of:

evaluating a response of each pixel in said image to each filter,

selecting a maximum response for each pixel and recording the angle of said filter to which said maximum response was related, and

associating said maximum response and said angle with its respective pixel for each pixel in said image.

2. (Original) The method according to claim 1 wherein said filters are Gabor filters.

3. (Original) The method according to claim 1 wherein said set of oriented filters comprises eighteen Gabor filters having angles of orientation from approximately 0 degrees to approximately 170 degrees at approximately 10 degree increments.

4. (Original) The method according to claim 1 wherein filter parameters are selected to identify scratches having predetermined width range.

5. (Original) The method according to claim 4 wherein said predetermined width range is about between three and ten pixels.

6. (Original) The method according to claim 4 wherein said parameters are further selected to ensure that angularly adjacent filters overlap.

7. (Original) The method according to claim 1 further comprising the step of chaining said filtered images to form a set of chained filtered images before said combining step and wherein said combining step combines said set of chained filtered images to form a combined image.

8. (Original) The method according to claim 1 wherein said incremented angles are clustered around predetermined angles of interest.

9. (Original) The method according to claim 2 wherein said step of applying said Gabor filters comprises applying only a real part of said Gabor filters.

10. (Cancelled)

11. (Original) The method according to claim 1 wherein said object comprises an optical fiber end surface.

12. (Currently Amended) An apparatus for detecting defects in an object comprising:

an image acquisition device; and

an image analysis system in communication with said image acquisition device wherein said image analysis system operates on an acquired image to detect defects by:

applying a set of oriented filters to said acquired image to generate a corresponding set of filtered images, wherein said set of oriented filters comprise two dimensional orthogonal filters having incremented angles of orientation between each; and

combining said set of filtered images to form a combined image. by evaluating a response of each pixel in said image to each filter,

selecting a maximum response for each pixel and recording the angle of said filter to which said maximum response was related, and

associating said maximum response and said angle with its respective pixel for each pixel in said image.

13. (Original) The apparatus according to claim 12 wherein said filters are Gabor filters.

14. (Original) The apparatus according to claim 12 wherein said set of oriented filters comprises eighteen Gabor filters having angles of orientation from 0 degrees to 170 degrees at 10 degree increments.

15. (Original) The apparatus according to claim 12 wherein filter parameters are selected to identify scratches having a predetermined width range.

16. (Original) The apparatus according to claim 15 wherein said predetermined width range is about between three and ten pixels.

17. (Original) The apparatus according to claim 15 wherein said parameters are further selected to ensure that angularly adjacent filters overlap.

18. (Cancelled)

19. (Currently Amended) An apparatus for detecting defects in an object comprising:

means for acquiring an image; and

means for analyzing said image in communication with said means for acquiring an image wherein said means for analyzing said image operates on an acquired image to detect defects by:

applying a set of oriented filters to said acquired image to generate a corresponding set of filtered images, wherein said set of oriented filters comprise two dimensional orthogonal filters having incremented angles of orientation between each; and

combining said set of filtered images to form a combined image~~.~~ by evaluating a response of each pixel in said image to each filter,

selecting a maximum response for each pixel and recording the angle of said filter to which said maximum response was related, and

associating said maximum response and said angle with its respective pixel for each pixel in said image.

20. (Original) The apparatus according to claim 19 wherein said filters are Gabor filters.

21. (Original) The apparatus according to claim 19 wherein said set of oriented filters comprises eighteen Gabor filters having angles of orientation from 0 degrees to 170 degrees at 10 degree increments.

22. (Original) The apparatus according to claim 19 wherein filter parameters are selected to identify scratches having a predetermined width range.

23. (Original) The apparatus according to claim 22 wherein said predetermined width range is about between three and ten pixels.

24. (Original) The apparatus according to claim 22 wherein said parameters are further selected to ensure that angularly adjacent filters overlap.

25. (Cancelled)

26. (Original) The method according to claim 1 wherein said applying step for each of said one or more oriented filters further comprises the steps of:

computing a Fourier transform of a corresponding filter kernel to form a frequency domain kernel;

computing the Fourier transform of said digital image to form a frequency domain image;

multiplying said frequency domain kernel with said frequency domain image to form a frequency domain product; and

inverse Fourier transforming said frequency domain product to form said filtered data.

27. (Original) The method according to claim 1 further comprising a step of sub-sampling said digital image to form a sub-sampled digital image prior to said step of applying a set of one or more oriented filters; and wherein said digital image to which said set of oriented filters is applied is said sub-sampled digital image.

28. (Currently Amended) The method according to claim 27 wherein said sub-sampled digital image <u>is square</u> ~~comprises a square data set~~ having sides that are multiples of powers of two.

29. (Original) The method according to claim 1 wherein said step of combining said data set of filtered data comprises interpolating subsets of said set of filtered data wherein said subsets comprise filtered data responses from a plurality of oriented filters.

30. (Original) The method according to claim 29 wherein said plurality of oriented filters are angularly adjacent oriented filters.